



7499 Pine Stake Road
Culpeper, VA 22701

Tel: 540-854-2037
Fax: 540-854-2002

June 26, 2018

Via FedEx

Mr. Luis A. Pizarro, Associate Director
Office of Remediation 3 LC20
Land and Chemicals Division
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103

Re: Submittal of the One-hundred and eleventh (111th) Quarterly Air Monitoring Report under RCRA RD&D Permit for Aerojet Rocketdyne's Orange County, Virginia Facility - EPA ID No. VAD981112618

Dear Mr. Pizarro:

This is the above-referenced one-hundred and eleventh (111th) quarterly air monitoring report for the period March 2018 - May 2018, the one-hundred and eleventh (111th) quarter of operation of Aerojet Rocketdyne's thermal treatment facility under the RCRA Research, Development, and Demonstration (RD&D) permit.

During this quarter, Aerojet Rocketdyne conducted one thermal treatment event (burn):

- April 25, 2018 (Burn 344A)

Burn 344A was and one-hundred-and-forty-seventh (147th) burn event, since operation of the thermal treatment facility commenced under the permit.

As required by the permit, monitoring is conducted during each treatment event at one monitoring station located upwind of the thermal treatment facility and three monitoring stations located downwind. Monitoring is conducted for ammonia (NH₃-N), hydrochloric acid (HCl), aluminum (Al), chromium (Cr), lead (Pb), carbon monoxide (CO), and total suspended particulates (TSPs).

WEATHER DATA:

Burn 344A

On the day of Burn 344A, the forecast was for mostly cloudy skies, with moderate winds from the northnorthwest (NNW) changing to northwest (NW) by late afternoon (www.accuweather.com for Rhoadesville, VA). Initial conditions at the weather station (8:49 AM) were light winds at 2.68 meters/second (m/s) out of the NE (28°). When checked at 10:06

Mr. Luis A. Pizarro
Page 2 of 3

AM, the winds were still light at 3.21 m/s and out of the NNE (16°). When checked again later at 10:43 AM, 11:41 AM, and 12:50 PM, the winds were still light at 3.26, 1.58, and 1.92 m/s, and were out of the NNE, W, and NW (35° , 43° , and 16° , respectively). With the wind predominantly from the NNE, and predicted to remain out of the N to NNW for the early afternoon, one upwind and three downwind air monitoring locations were selected. The upwind monitoring location selected was Site II to the N of the thermal treatment facility (TTF). The three downwind locations selected were Sites AA, BB, and DD, which are located to the ESE, SE, and SW of the TTF, respectively (see map included as Attachment 1).

At the time of initiation of air monitoring (2:08 PM), the wind direction was out of the NNE (16°) and the wind speed was light at 0.86 m/s. At the time of thermal treatment unit ignition (2:28 PM), the wind direction was out of the ENE (90°) and the wind speed was light at 1.07 m/s. The most direct downwind location during this period was Site LL, which was not monitored as a downwind location. At 20 minutes after the thermal treatment units were ignited (2:48 PM), the wind direction was out of the NE (58°) and the wind speed was light at 1.92 m/s. The most direct downwind locations during this period were Sites DD and LL, which only Site DD was monitored as a downwind location. At 45 minutes after the thermal treatment units were ignited until air sampling was stopped (3:13 PM), the wind direction was out of the NNE (33°) and the wind speed was light at 1.23 m/s. The most downwind location during this period was Site DD, which was monitored as a downwind location. Except for the period of unpredicted wind direction out of the ENE, the most downwind location during this entire period was Site DD, which was monitored as a downwind location. Weather data for the date/time of the burn/monitoring event is included in Attachment 2.

MONITORING DATA:

Burn 344A

The statistical evaluation for the thermal treatment event conducted on April 25, 2018 (Burn 344A) indicated that the downwind locations sampled were in the same statistical population as the upwind location sampled, with all downwind results estimated not likely to exceed the background/upwind location or not significant because the constituents were below detection limits for all parameters (see Attachment 3 for details). However, because there was an unpredicted shift in the wind direction during air sampling for Burn 344A from NNW to ENE, the most downwind sampling location was not always sampled during the monitoring period. Therefore, although there is no reason to believe that air quality was adversely impacted, Aerojet Rocketdyne is not able to conclude that air quality was not adversely impacted during Burn 344A for monitoring parameters ammonia (NH₃N), hydrochloric acid (HCl), aluminum (Al), chromium (Cr), lead (Pb), total suspended particulates (TSP), and carbon monoxide (CO).



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Mr. Luis A. Pizarro
Page 3 of 3

Should you have any questions or comments concerning any information in this quarterly air monitoring report, please contact me at 540-854-2024 or ross.roberson@Rocket.com.

Sincerely,

AEROJET ROCKETDYNE, INC.
Virginia Operations

A handwritten signature in black ink, appearing to read "Ross Roberson".

Ross Roberson, CSP
Specialist SH&E Engineer
Principal Investigator

ATT

cc: Leslie Romanchik, VDEQ/Waste Division
Richard Doucette, VDEQ/NRO
Brian Wheatley, Aerojet Rocketdyne
Clarkson Meredith, Versar



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June 26, 2018

CERTIFICATION LETTER

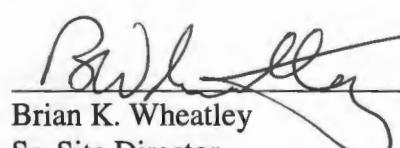
Dear Sir:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The document certified by this letter is the "One-hundred and eleventh (111th) Quarterly Air Monitoring Report Under RCRA RD&D Permit for Aerojet Rocketdyne, Inc.'s Orange County, Virginia Facility", RD&D Permit - EPA ID No. VAD981112618, dated June 22, 2018.

Sincerely,

AEROJET ROCKETDYNE, INC.


Brian K. Wheatley
Sr. Site Director

6/26/18



Memo

June 1, 2015

To: Brian Wheatley

From: Chris W. Conley
Vice President, Environmental Health and Safety

Subject: Delegation of Authority

Copies: Brian Sweeney, Chris Cambria, William Hvidsten, Ron Felix, Tom Cadwell,
Tim Holden, David Rymph, Ron Sherer, Jan DeMeulenaere

Reference: (a) Memorandum, Chairman of the Board, Aerojet-General Corporation, to President,
Aerojet-General Corporation, dated January 7, 1985

(b) Memorandum, Office of the President, Aerojet-General Corporation, to Vice
President, Environmental Health and Safety, Aerojet-General Corporation, dated
October 21, 2008

Pursuant to the delegation of authority established by reference (a) and (b), authority is further
re-delegated to Brian Wheatley to execute all agreements and documents related to permit applications,
reports or other information submitted to regulatory agencies on behalf of Aerojet Rocketdyne, Inc.
and pertaining to its Environmental, Health and Safety functions at the Orange, VA facility.

This authority does not extend to documents expressly requiring a Aerojet Rocketdyne Holdings, Inc.
Corporate Officer's signature and is subject to legal or other reviews and approvals required by
Aerojet Rocketdyne Holdings, Inc. and Aerojet Rocketdyne Leadership Media. This supersedes all
previous delegations that you may have received relative to signature authority on third party
documents.

This authority may be re-delegated subject to such limitations as deemed advisable. Please make all
subsequent delegations in duplicate originals, furnishing one to the addressee and one to the Aerojet
Rocketdyne Legal Department.



Chris W. Conley
Vice President
Environmental Health and Safety



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Attachment 1

**Aerojet Rocketdyne, Inc.
Orange County, Virginia**

AIR MONITORING LOCATION MAPS

Thermal Treatment Event 344A
April 25, 2018

Burn 344A

4/25/88

AEROJET

7499 Pine Stake Road
Culpeper, VA 22701

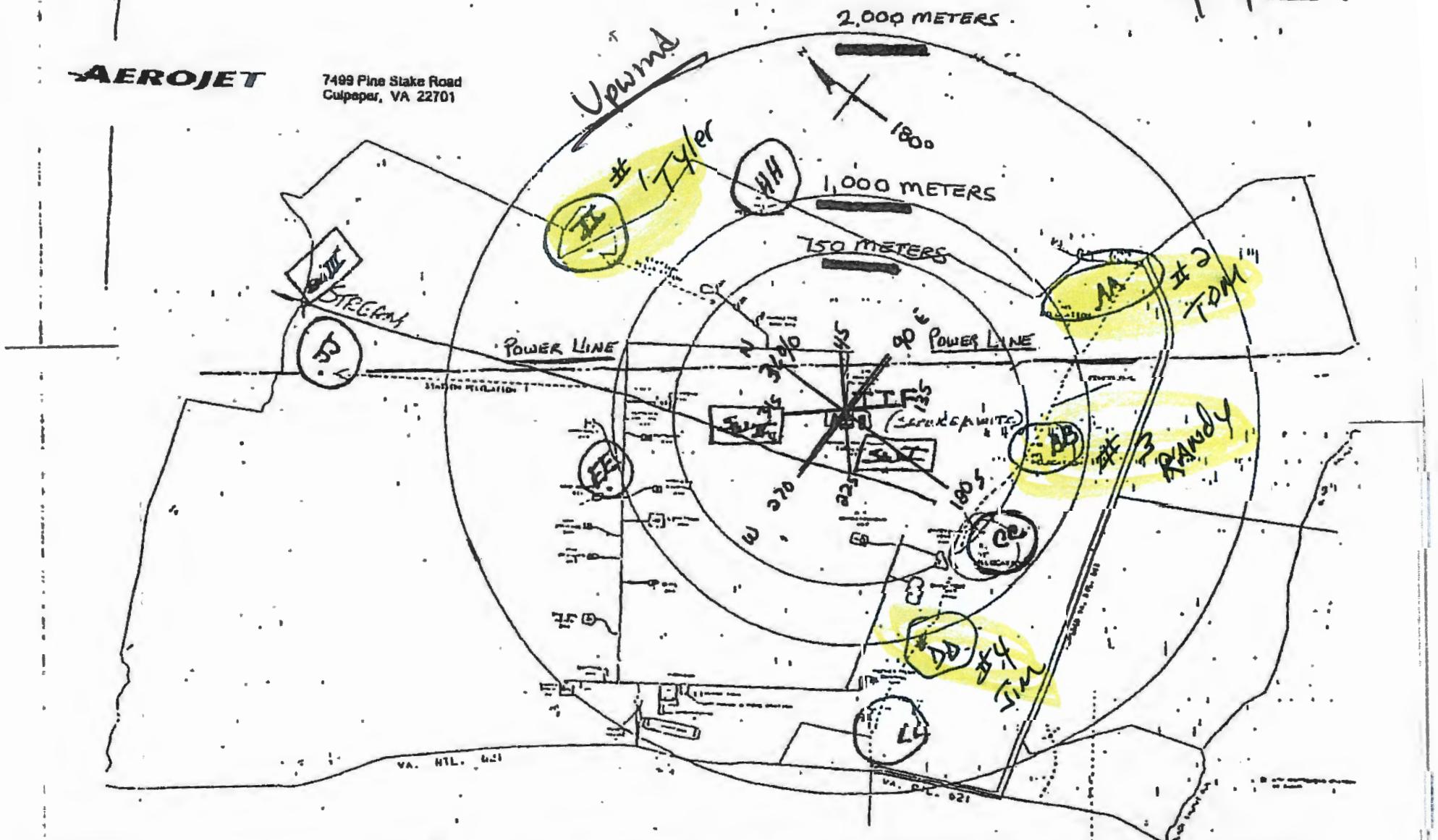


FIGURE 6 - AIR MONITORING STATIONS
FOR OPERATIONAL PHASE AIR MONITORING

TTF = THERMAL TREATMENT FACILITY



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Attachment 2

**Aerojet Rocketdyne, Inc.
Orange County, Virginia**

WEATHER STATION DATA

Thermal Treatment Event 344A
April 25, 2018



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Thermal Treatment Event 344A – April 25, 2018:

TIME (EDT)	WIND SPEED (m/s)	WIND DIRECTION (°; avg.)	TEMP.(°C)	COMMENTS
08:49	2.68	28	11.33	NE
10:06	3.21	16	11.83	NNE
10:43	3.26	35	12.69	NNE
11:41	1.58	43	13.49	NE
12:50	1.92	342	14.72	NNW
14:08 (T-20)	0.86	16	15.57	NNE
14:28 (T)	1.07	90	14.93	ENE
14:48 (T+20)	1.92	58	15.22	NE
15:13 (T+45)	1.23	33	16.0	NNE
15:38 (T+70)	2.65	27	17.0	NNE

Air Sampling Initiated (T-20): 2:40 PM

Thermal Treatment Units Ignited (T): 2:28 PM

Air Sampling Completed (T+70): 3:38 PM

N/A – Not available due to malfunction of the weather station

Rhoadesville, VA



Follow us on

Allergies: Low

United States Weather

Rhoadesville, VA

53°F

Now

Weekend

Extended

Month

Radar

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1 - 5 of 90 days | All 90 days

Next 5

TODAY APR 25	THU APR 26	FRI APR 27	SAT APR 28	SUN APR 29
66°/47°F Mostly cloudy with a shower	71°/51° Times of clouds and sun More	66°/45° A little rain in the morning More	72° Partly sunny and pleasant More	64°/37° Plenty of sunshine More

[Now](#) [Daily](#) [Hourly](#) [Morning](#) [Afternoon](#) [Evening](#) [Overnight](#)

Next 8 hours

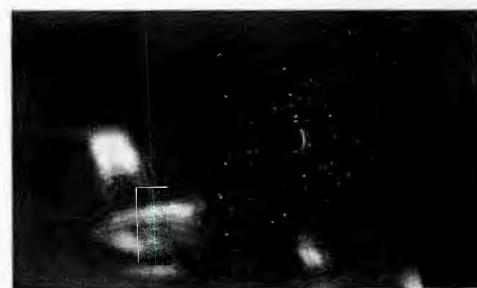
WEDNESDAY	6am	7am	8am	9am	10am	11am	12pm	1pm
Forecast	Cloudy	Cloudy	Shower s	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy
Temp (°F)	53°	53°	54°	55°	56°	58°	60°	61°
RealFeel®	51°	52°	50°	55°	57°	60°	62°	64°
Wind (mph)	6 N	5 N	6 N	6 N	6 NNW	6 NNW	6 NNW	6 NNW

Trending News

Watch rare corpse flower blooming at Tucson Botanical Gardens

Scientists confirm Uranus smells like rotten eggs

TRENDING NOW



Top 10 spring allergy cities in the US, 2018 report finds

Spring allergies can cause a lot of misery for millions of people in the United States; knowing the most challenging places to live with spring allergies can help people in these areas be more aware of what may contribute to their allergy symptoms.

[Read Story](#)


Uranus smells like rotten eggs

The clouds in Uranus' upper atmosphere are composed largely of hydrogen sulfide, the

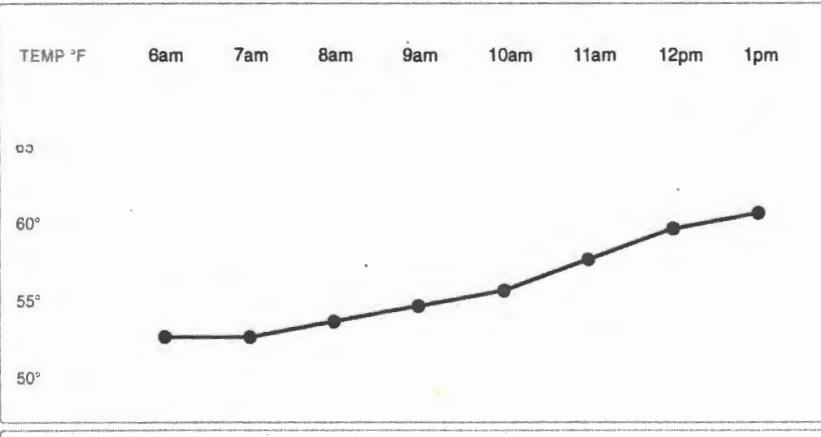
PRECIP	6am	7am	8am	9am	10am	11am	12pm	1pm
Rain	37%	40%	51%	47%	40%	33%	33%	39%
Snow	0%	0%	0%	0%	0%	0%	0%	0%
Ice	0%	0%	0%	0%	0%	0%	0%	0%

molecule that makes rotten eggs so stinky, a new study suggests.

[Read Story](#)

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SKY	6am	7am	8am	9am	10am	11am	12pm	1pm
UV Index	0	0	0	1	1		2	2
Cloud Cover	100%	100%	94%	94%	94%		94%	94%
Humidity	97%	97%	97%	95%	91%	89%	87%	82%
Dew Point	52°	52°	53°	54°	54°	55°	56°	55°
Visibility	6 mi	6 mi	6 mi	10 mi				



TEMPERATURE HISTORY APR 25

	Today	Normal	Record	4/25/2017
High	66°	70°	N/A	59°
Low	47°	47°	N/A	50°

[More Historical Weather Data](#)

SUNRISE/SUNSET

Sunrise: 6:23 AM
Sunset: 7:57 PM

MOONRISE/MOONSET

Moonrise: 3:30 PM
Moonset: 4:45 AM

Astronomy

Rhoadeville, VA



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Rhoadeville, VA

53°F

Allergies: Low

Now

Weekend

Extended

Month

Radar

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Next 5

TODAY APR 25	THU APR 26	FRI APR 27	SAT APR 28	SUN APR 29
66°/47°F Mostly cloudy with a shower	71°/51° Times of clouds and sun	66°/45° A little rain in the morning	72° Partly sunny and pleasant	64°/37° Plenty of sunshine
More	More	More	More	More

Now Daily Hourly Morning Afternoon Evening Overnight

Previous 8 hours

Next 8 hours

WEDNESDAY	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm
Forecast	Shower s	Cloudy						
Temp (°F)	62°	64°	65°	66°	65°	63°	62°	60°
RealFeel®	62°	65°	65°	65°	65°	63°	61°	58°
Wind (mph)	6 NNW	6 NNW	6 N	7 N	6 NNW	6 NNW	6 NW	6 NW

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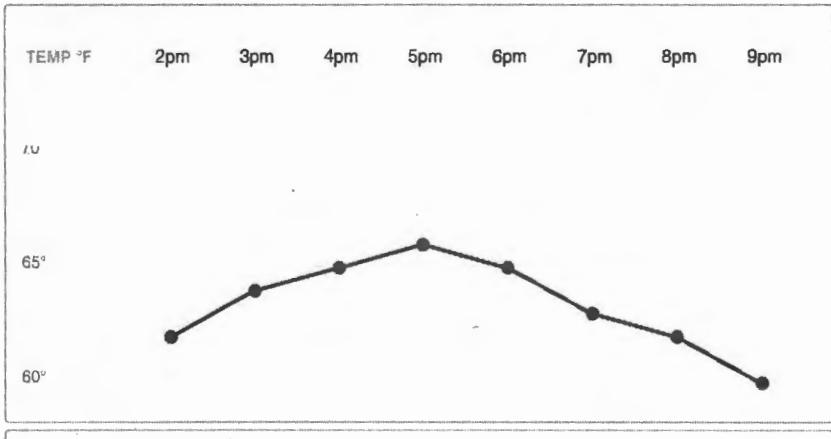
PRECIP	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm
Rain	51%	47%	40%	34%	34%	23%	3%	3%
Snow	0%	0%	0%	0%	0%	0%	0%	0%
Ice	0%	0%	0%	0%	0%	0%	0%	0%

molecule that makes rotten eggs so stinky, a new study suggests.

[Read Story](#)

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SKY	2pm	3pm	4pm	5pm	6pm	8pm	9pm
UV Index	2	2	1	1	0	0	0
Cloud Cover	94%	94%	91%	90%	94%	70%	65%
Humidity	79%	74%	74%	71%	72%	75%	74%
Dew Point	55°	55°	57°	56°	56°	55°	53°
Visibility	6 mi	10 mi					



Previous 8 hours

Next 8 hours

TEMPERATURE HISTORY APR 25				
	Today	Normal	Record	4/25/2017
High	66°	70°	N/A	59°
Low	47°	47°	N/A	50°

[More Historical Weather Data](#)

SUNRISE/SUNSET

Sunrise: 6:23 AM
Sunset: 7:57 PM

MOONRISE/MOONSET

Moonrise: 3:30 PM
Moonset: 4:45 AM

Astronomy

106	2018	114	1630	3.365	95.7	16.12	11.88	
106	2018	114	1645	3.107	97.3	19.2	11.8	
106	2018	114	1700	2.822	87.8	20.94	11.79	
111	2018	114	1700	3.125	94.5	19.2	11.84	12.95
106	2018	114	1715	2.504	81.1	27.48	11.76	
106	2018	114	1730	2.746	84.4	19.28	11.76	
106	2018	114	1745	3.001	88.9	26.42	11.78	
106	2018	114	1800	3.071	86.3	32.35	11.82	
111	2018	114	1800	2.83	85.1	26.86	11.78	12.81
106	2018	114	1815	2.309	82.9	27.19	11.8	
106	2018	114	1830	2.416	82.7	28.75	11.84	
106	2018	114	1845	2.199	76.5	23	11.85	
106	2018	114	1900	2.193	85.3	29.4	11.85	
111	2018	114	1900	2.279	81.8	27.37	11.84	12.78
106	2018	114	1915	2.469	83	24.3	11.84	
106	2018	114	1930	2.153	82.4	26.59	11.85	
106	2018	114	1945	2.136	78.9	21.54	11.9	
106	2018	114	2000	1.986	72.3	26.17	11.85	
111	2018	114	2000	2.186	79.2	25.07	11.86	12.76
106	2018	114	2015	2.016	61.41	24.43	11.84	
106	2018	114	2030	1.633	44.79	20.38	11.82	
106	2018	114	2045	1.702	50.9	27.22	11.76	
106	2018	114	2100	1.719	47.22	24.43	11.72	
111	2018	114	2100	1.767	51.02	25.03	11.79	12.74
106	2018	114	2115	1.815	41.21	19.29	11.65	
106	2018	114	2130	1.987	39.06	18.43	11.62	
106	2018	114	2145	1.827	38.5	21.88	11.58	
106	2018	114	2200	1.948	21.26	16.97	11.55	
111	2018	114	2200	1.894	34.98	20.81	11.6	12.73
106	2018	114	2215	2.014	25.76	18.75	11.52	
106	2018	114	2230	1.918	19.67	17.13	11.45	
106	2018	114	2245	1.89	17.75	14.88	11.38	
106	2018	114	2300	2.204	18.37	12.84	11.27	
111	2018	114	2300	2.006	20.36	16.35	11.41	12.71
106	2018	114	2315	2.375	16.75	15.03	11.2	
106	2018	114	2330	2.214	13.04	12.87	11.17	
106	2018	114	2345	2.028	14.88	14.84	11.13	
106	2018	115	0	2.479	16.01	13.66	11.06	
111	2018	115	0	2.274	15.17	14.2	11.14	12.69
106	2018	115	15	2.552	17.08	12.91	11.03	
106	2018	115	30	2.472	19.9	17.16	11.02	
106	2018	115	45	2.637	25.55	15.44	11	
106	2018	115	100	2.494	20.77	13.52	11.01	
111	2018	115	100	2.539	20.81	15.15	11.01	12.68
106	2018	115	115	2.613	22.7	19.36	10.97	
106	2018	115	130	2.328	18.26	14.86	10.97	
106	2018	115	145	2.1	1.799	17.91	10.95	
106	2018	115	200	2.585	3.333	14.19	10.93	
111	2018	115	200	2.407	11.48	19	10.96	12.66
106	2018	115	215	2.217	24.61	14.15	10.94	
106	2018	115	230	2.064	14.99	15.63	10.95	
106	2018	115	245	2.536	13.69	14.47	10.95	
106	2018	115	300	2.141	17.54	18.15	10.92	
111	2018	115	300	2.239	17.71	16.23	10.94	12.63

106	2018	115	315	2.208	11.32	15.46	10.91	
106	2018	115	330	2.48	7.78	13.38	10.87	
106	2018	115	345	2.21	7.03	15	10.83	
106	2018	115	400	2.605	8.27	13.02	10.81	
111	2018	115	400	2.376	8.6	14.34	10.85	12.6
106	2018	115	415	2.413	8.45	14.43	10.79	
106	2018	115	430	2.692	17.04	16.45	10.78	
106	2018	115	445	2.605	8.55	13.52	10.75	
106	2018	115	500	2.947	13.19	14.26	10.73	
111	2018	115	500	2.664	11.79	15.12	10.76	12.58
106	2018	115	515	2.369	13.25	16.31	10.72	
106	2018	115	530	2.618	10.43	13.4	10.71	
106	2018	115	545	2.895	8.08	15.31	10.71	
106	2018	115	600	2.25	19.17	13.75	10.72	
111	2018	115	600	2.533	12.74	15.31	10.72	12.54
106	2018	115	615	2.461	9.92	14.62	10.75	
106	2018	115	630	2.873	14.76	12.38	10.8	
106	2018	115	645	2.837	12.06	13.45	10.84	
106	2018	115	700	2.296	17.97	16.38	10.96	
111	2018	115	700	2.617	13.67	14.59	10.84	12.88
106	2018	115	715	2.45	11.38	15.96	11.04	
106	2018	115	730	2.434	5.843	15.47	11.17	
106	2018	115	745	2.788	9.79	16.72	11.24	
106	2018	115	800	2.594	9.82	16.85	11.35	
111	2018	115	800	2.566	9.21	16.39	11.2	13.38
106	2018	115	815	2.63	11.23	17.83	11.48	
106	2018	115	830	3.114	15.45	13.14	11.59	
106	2018	115	845	2.31	13.97	16.9	11.85	
106	2018	115	900	2.888	11.74	15.11	11.84	
111	2018	115	900	2.735	13.11	15.93	11.69	14.14
106	2018	115	915	2.908	6.715	14.23	12.04	
106	2018	115	930	2.774	7.74	18.57	12.43	
106	2018	115	945	2.563	14.36	20.16	12.66	
106	2018	115	1000	2.468	11.34	18.21	12.92	
111	2018	115	1000	2.678	10.01	18.17	12.51	13.25
106	2018	115	1015	2.119	26.31	21.93	13.19	
106	2018	115	1030	2.41	14.06	22.29	13.45	
106	2018	115	1045	2.113	32.82	18.42	13.52	
106	2018	115	1100	2.04	12.17	17.24	13.66	
111	2018	115	1100	2.171	21.34	21.82	13.45	13.96
106	2018	115	1115	2.522	24.88	13.45	13.57	
106	2018	115	1130	2.52	19.88	26.61	14.4	
106	2018	115	1145	2.372	39.27	21.62	14.75	
106	2018	115	1200	2.475	19.41	19.31	14.66	
111	2018	115	1200	2.472	25.85	22.2	14.34	13.28
106	2018	115	1215	2.561	7.52	23.04	14.75	
106	2018	115	1230	2.558	14.81	24.64	15.35	
106	2018	115	1245	3.061	30.25	22.55	15.31	
106	2018	115	1300	2.219	13.31	26.25	15.31	
111	2018	115	1300	2.6	16.48	25.58	15.18	13.17
106	2018	115	1315	2.369	4.064	17.39	15.43	
106	2018	115	1330	2.496	50.91	34.75	15.27	
106	2018	115	1345	2.191	56.85	16.73	14.97	
106	2018	115	1400	2.328	55.78	18.12	15.27	

Burn 344A
Air monitoring
period cont..

Burn 344A								
Air Monitoring period								
111	2018	115	1400	2.346	42.23	31.82	15.24	13.17
106	2018	115	1415	2.285	32.6	27.6	15.71	
106	2018	115	1430	1.851	48.24	42.85	16.83	
106	2018	115	1445	2.225	24.47	32.49	17.54	
106	2018	115	1500	2.064	56.76	22.06	17.26	
111	2018	115	1500	2.106	40.58	34.35	16.83	13.02
106	2018	115	1515	1.783	86	40.35	17.67	
105	2018	115	1530	1.944	113.4	19.69	18	
106	2018	115	1545	1.973	105.7	18.76	17.88	
106	2018	115	1600	2.209	135	31.78	17.69	
111	2018	115	1600	1.977	110.5	33.3	17.81	13.67
106	2018	115	1615	1.76	129.9	19	17.82	
106	2018	115	1630	1.55	136.8	19.39	17.77	
106	2018	115	1645	1.757	118	19.23	17.69	
106	2018	115	1700	2.055	130	15.81	17.15	
111	2018	115	1700	1.781	128.7	19.59	17.61	13.04
106	2018	115	1715	1.332	127.3	16.21	16.89	
106	2018	115	1730	.645	166.8	10.71	16.68	
106	2018	115	1745	.643	212.2	11.06	16.61	
106	2018	115	1800	.554	248.8	20.54	16.59	
111	2018	115	1800	.793	188.6	49.57	16.69	12.92
106	2018	115	1815	.451	249.9	49.64	16.45	
106	2018	115	1830	.827	71.9	19.53	16.36	
106	2018	115	1845	.905	149.4	41.09	16.21	
106	2018	115	1900	.694	196.9	10.12	15.91	
111	2018	115	1900	.719	166.9	74.5	16.23	12.79
106	2018	115	1915	.716	223.5	20.72	15.81	
106	2018	115	1930	.375	38.97	72.2	15.64	
106	2018	115	1945	.412	190.1	32.31	15.65	
106	2018	115	2000	.335	221.1	54.53	15.54	
111	2018	115	2000	.459	209.5	67.94	15.66	12.76
106	2018	115	2015	.517	234.2	12.9	15.44	
106	2018	115	2030	.657	285.7	13.54	15.47	
106	2018	115	2045	.631	296.9	12.02	15.52	
106	2018	115	2100	.696	283.3	26.15	15.66	
111	2018	115	2100	.625	275.6	29.72	15.52	12.75
106	2018	115	2115	1.348	337.9	12.36	16.12	
106	2018	115	2130	.882	336.6	22.98	16.05	
106	2018	115	2145	.36	288.2	40.69	15.85	
106	2018	115	2200	.975	9.04	17.5	15.75	
111	2018	115	2200	.891	335.8	37.6	15.94	12.73
106	2018	115	2215	.544	15.59	85.5	15.44	
106	2018	115	2230	.884	55.32	35.16	15.07	
106	2018	115	2245	1.402	126.2	16.58	15.09	
106	2018	115	2300	1.293	80.2	27.13	15.37	
111	2018	115	2300	1.031	82.8	56.85	15.24	12.71
106	2018	115	2315	.888	41.82	18.67	15.03	
106	2018	115	2330	.766	359.7	30.91	14.32	
106	2018	115	2345	.982	8.36	11.97	14.1	
106	2018	116	0	.707	129.4	53.59	13.66	
111	2018	116	0	.836	30.71	55.6	14.28	12.69
106	2018	116	15	.922	22.6	16.34	14.11	
106	2018	116	30	1.045	10.89	17.65	13.75	
106	2018	116	45	1.32	24.07	10.94	13.82	



7499 Pine Stake Road
Culpeper, VA 22701

Tel: 540-854-2037
Fax: 540-854-2002

Attachment 3

Aerojet Rocketdyne, Inc.
Orange County, Virginia

Monitoring Results & Statistical Evaluation

Thermal Treatment Event 344A
April 25, 2018

7499 Pine Stake Road
Culpeper, VA 22701

An Aerojet Rocketdyne Holdings Company

June 21, 2017

Mr. Tim Holden
Environmental Manager
Aerojet Corporation
7499 Pine Stake Road
Culpeper, VA 20155

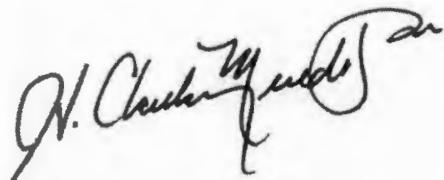
Subject: Burns 344A Statistical Report: Versar Project No. 112133

Dear Mr. Holden:

Enclosed please find General Chemistry Results and Statistical Evaluations for Burn 344A conducted on April 25, 2018. All results were estimated as not likely to exceed background or as not significant because the constituents were not detected (e.g., hydrogen chloride).

Should you have any questions, please do not hesitate to contact me at (703) 642-6842.

Sincerely,



H. Clarkson Meredith, III
Sr. Project Manager
Springfield Environmental Services Group

Encl.



VERSAR

6850 Versar Center
Springfield, VA 22151
703.750.3000
www.versar.com

AEROJET CORP., ORANGE COUNTY FACILITY
Burn 344A - Statistical Evaluation
April 25, 2018

BURN 344A RAW FIELD DATA AND LABORATORY RESULTS

SAMPLE NUMBER	SAMPLE LOCATION	NH3-N (ug/sample)	HCl in air (ug/sample)	Al (ug/sample)	Cr (ug/sample)	Pb (ug/sample)	CO (ppm)	Total Suspended Particulates (TSP)		
		(mg)	(mg)	(mg/sample)	after	before	mass			
II-344A	Upwind	9.52	5 <	65.7	0.247 <	1.97 <	0.57	4,332.90	4,331.90	1.00
AA-344A	Downwind	6.41	5 <	58.9	0.251	1.98 <	0.56	4,339.80	4,338.90	0.90
BB-344A	Downwind	10.40	5 <	75.4	0.318	1.98 <	0.45	4,337.30	4,336.20	1.10
DD-344A	Downwind	8.92	5 <	54.7	0.247 <	1.98 <	0.49	4,333.90	4,332.60	1.30
		NH3-N VOLUMES (L)	HCl in air VOLUMES (L)	Metals & TSP VOLUMES (ft ³)	CO Volumes (L)					
II-344A	Upwind	18.340	36.270	3,600	9.162					
AA-344A	Downwind	18.234	36.252	3,600	9.198					
BB-344A	Downwind	18.306	36.234	3,600	9.144					
DD-344A	Downwind	18.288	36.270	3,600	9.162					

< - Denotes constituent not detected. Value is the analytical reporting limit.

AEROJET CORP., ORANGE COUNTY FACILITY
Burn 344A - Statistical Evaluation
April 25, 2018

SAMPLE NUMBER	SAMPLE LOCATION	NH3-N (ug/m3)	HCl in air (ug/m3)	Al (ug/m3)	Cr (ug/m3)	Pb (ug/m3)	CO (ppm)	TSP (ug/m3)
BURN 344A								
II-344A	Upwind	519.1	<	137.9	0.65	<	0.002	0.57
AA-344A	Downwind	351.5	<	137.9	0.58	<	0.002	0.56
BB-344A	Downwind	568.1	<	138.0	0.74	<	0.003	0.45
DD-344A	Downwind	487.8	<	137.9	0.54	<	0.002	0.49

NOTES:

< = Not detected.

	NH3-N	HCl in air	Al	Cr	Pb	CO	TSP
COUNT:	3	3	3	3	3	3	3
MEAN DOWNDOWN CONC.:	469	69.0	0.62	0.00	0.0049	0.500	10.8
STANDARD DEVIATION:	89	0.03	0.09	0.000	0.0000	0.045	1.6
SQRT(N+1/n):	1.15	1.15	1.15	1.15	1.15	1.15	1.15
SAMPLE t VALUE:	0.48	1.06	0.26	0.66	#DIV/0!	1.33	0.53
DEGREE OF FREEDOM:	2	2	2	2	2	2	2
CRITICAL t VALUE:	6.965	6.965	6.965	6.965	6.965	6.965	6.965
COMMENTS:	NOT SIGN	*NOT SIGN	NOT SIGN	NOT SIGN	*NOT SIGN	NOT SIGN	NOT SIGN

NOTES:

NOT SIGN = Not Significant. Population mean of downwind concentrations likely does not exceed upwind concentrations.

*NOT SIGN = Not Significant. All downwind samples results were below the reporting limit.

SIGNIFICANT = Population mean of downwind concentrations likely exceeds the upwind concentration.